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Robert et al.

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(54) **MOUNTING SYSTEM FOR A HEADREST RETRACTABLE BY GRAVITY, ASSEMBLY COMPRISING SUCH A MOUNTING SYSTEM AND VEHICLE SEAT COMPRISING SUCH AN ASSEMBLY**

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B60N 2/48	(2006.01)
B60N 2/46	(2006.01)

(52) **U.S. Cl.**

CPC ***B60N 2/4811*** (2013.01); ***B60N 2/464*** (2013.01); ***B60N 2/482*** (2013.01); ***B60N 2/4814*** (2013.01); ***B60N 2/4829*** (2013.01); ***B60N 2/4864*** (2013.01); *B60N 2/4817* (2013.01); *Y10T 403/602* (2015.01); *Y10T 403/7062* (2015.01)

(58) **Field of Classification Search**

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USPC 297/410, 391, 409, 411.37, 411.36

See application file for complete search history.

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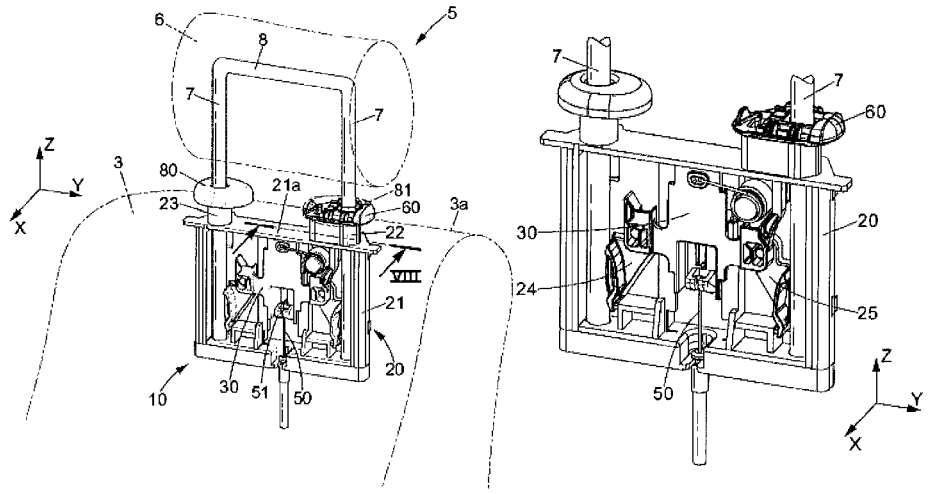
(57) **ABSTRACT**

A mounting system for a headrest comprising at least one shaft, the system comprising a housing adapted to enclose the shaft with a radial clearance, a moving carriage capable of being moved between a blocking position and an unblocking position, and a jaw movable between an immobilization position and a release position. The jaw is adapted to apply, when it is in the immobilization position, a clamping force to the shaft in a clamping direction perpendicular to the vertical direction, so that the shaft is supported on the housing. The moving carriage comprises at least one drive slot in which a slug from the jaw is able to move.

6 Claims, 7 Drawing Sheets



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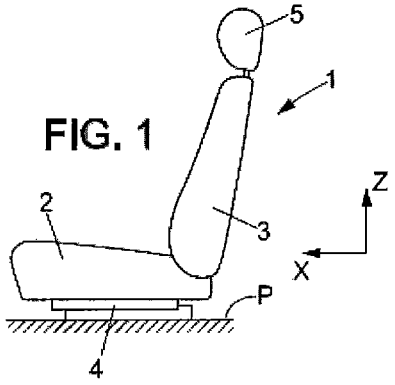


FIG. 1

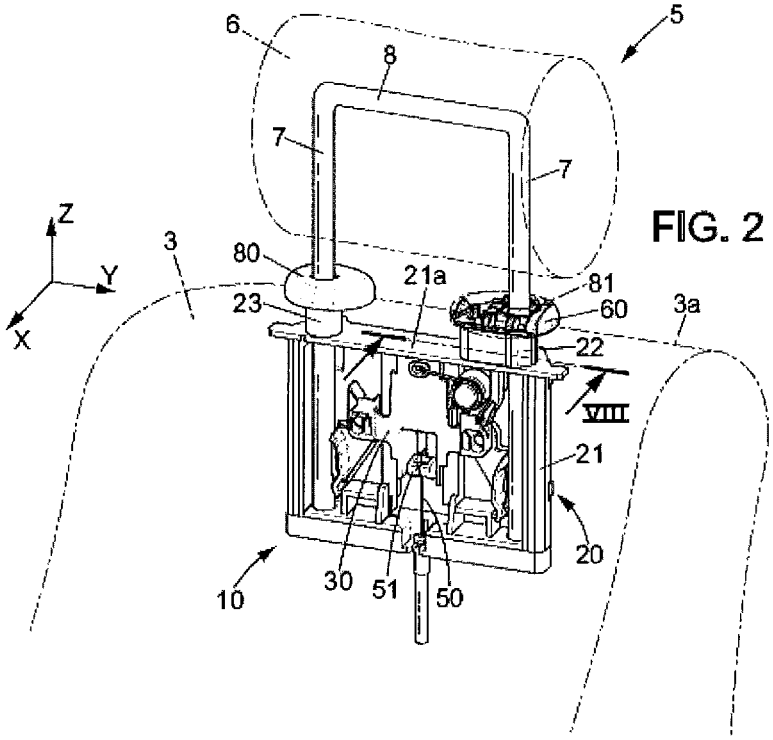


FIG. 2

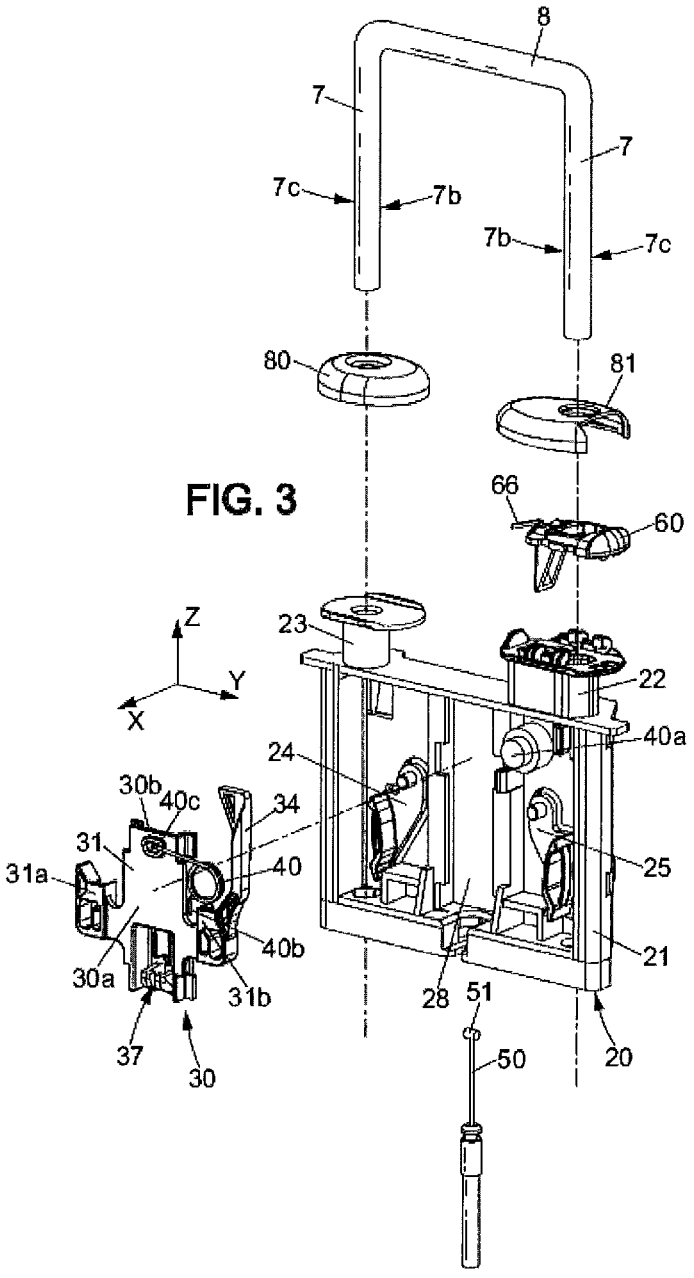

8
7
7
7c
7b
7b
7c
80
81
66
60
23
22
40a
24
30b
40c
34
31
31a
40
25
40b
21
30a
31b
28
51
37
30
50
20
Z
Y
X

FIG. 3

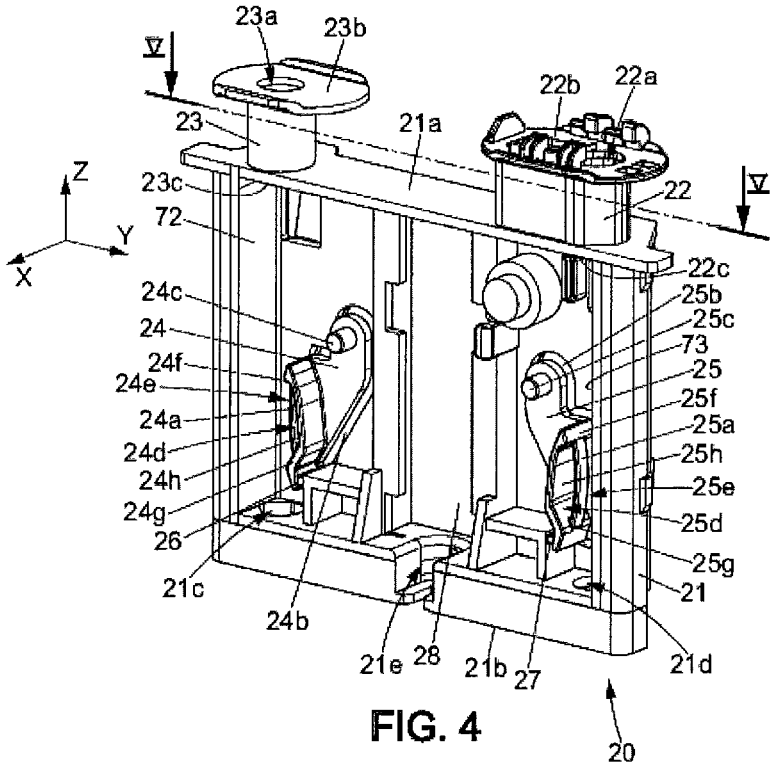

23a
23b
V
22b
22a
23
21a
Z
23c
22
V
72
Y
X
22c
24c
25b
25c
24
73
24f
25
24e
25f
24a
25a
24d
25h
24h
25e
24g
25d
26
25g
21c
21
24b
21e
28
21b
27
21d
20

FIG. 4

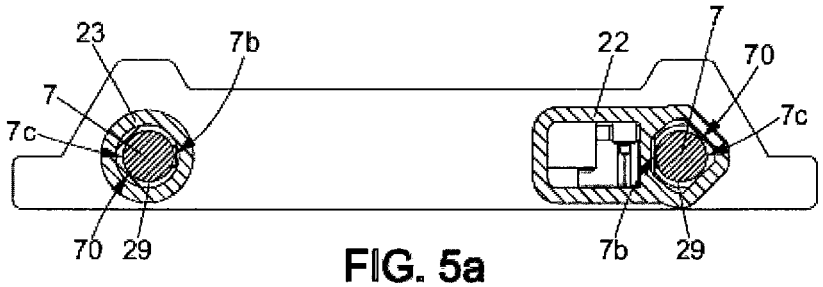

23
7b
7
7c
70
29
22
7
70
7c
7b
29

FIG. 5a

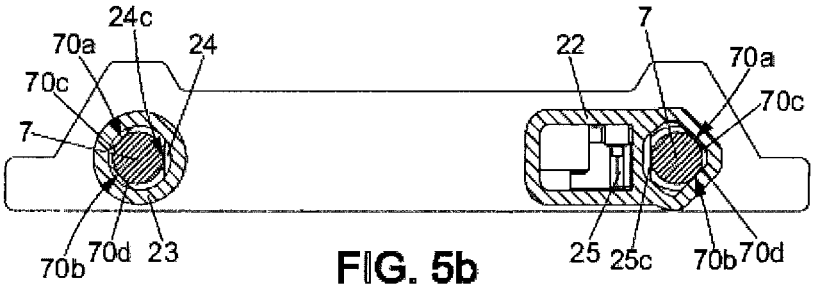

24c
70a
24
70c
7
70b
70d
23
22
7
70a
70c
25
25c
70b
70d

FIG. 5b

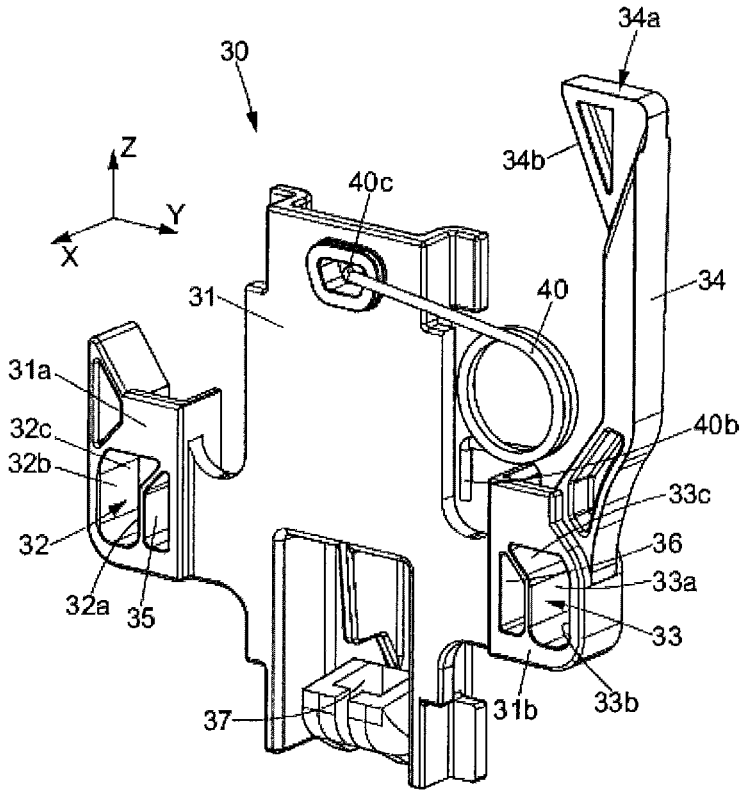

30
34a
34b
Z
Y
X
40c
31
40
34
31a
32c
32b
32
32a
35
40b
33c
36
33a
33
33b
31b
37

FIG. 6

FIG. 7a

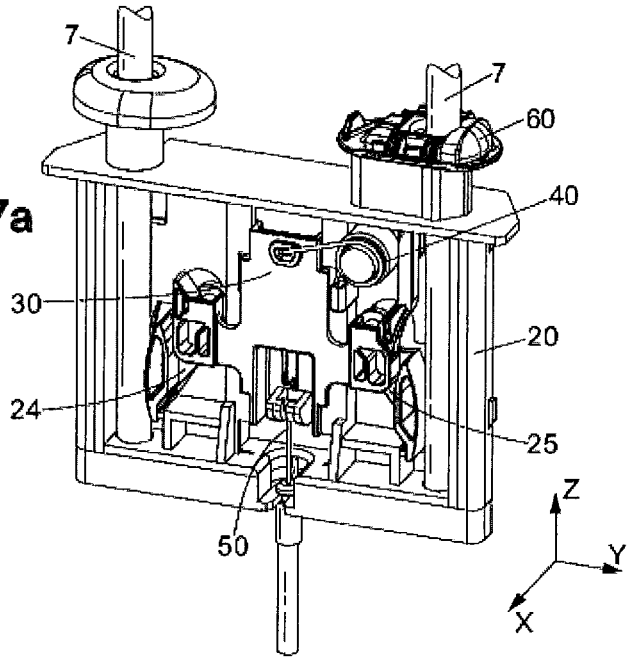
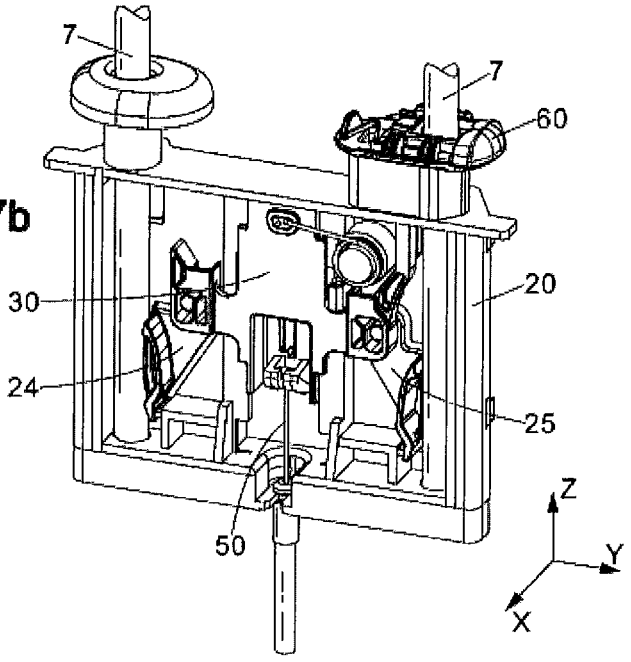


FIG. 7b



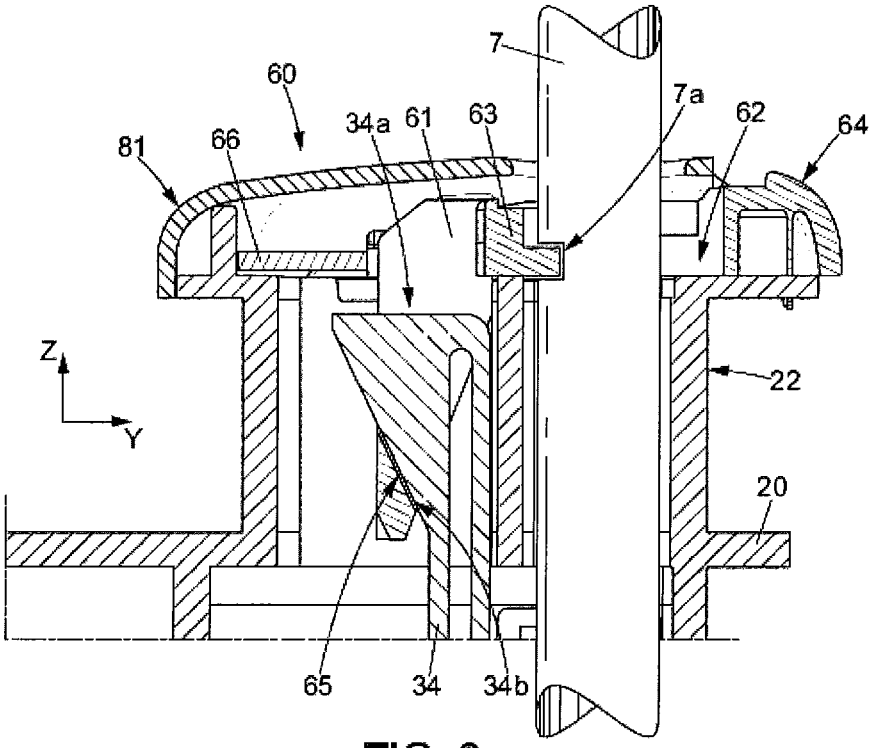


FIG. 8

MOUNTING SYSTEM FOR A HEADREST RETRACTABLE BY GRAVITY, ASSEMBLY COMPRISING SUCH A MOUNTING SYSTEM AND VEHICLE SEAT COMPRISING SUCH AN ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 USC §119 and the Paris Convention to French Patent Application No. FR 13 50082, filed on Jan. 4, 2013.

FIELD OF THE DISCLOSURE

The present invention relates to the mounting systems for a headrest retractable by gravity on a seat, to the assemblies comprising such a mounting system as well as a headrest and to the vehicle seats comprising such an assembly.

BACKGROUND OF THE DISCLOSURE

More specifically, the invention relates to a mounting system for at least one shaft, the shaft extending in a vertical direction, the mounting system comprising

- a housing adapted to enclose the shaft with a radial clearance and
- a moving carriage that can be moved between a blocking position and an unblocking position,
- at least a jaw movable between an immobilization position and a release position,

the jaw being driven by the moving carriage to be in the immobilization position when the moving carriage is in the unblocking position and in the release position when the moving carriage is in the blocking position, the jaw being adapted to apply, when it is in the immobilization position, a clamping force to the shaft in a clamping direction perpendicular to the vertical direction, so that the shaft is supported on the housing.

Document EP 1 602 527 describes an example of a mounting system for a headrest on a seat that includes the features mentioned above and allows the retraction of the headrest simply under gravity. In order to allow the descent of the headrest under gravity, it is necessary for the shafts to be free in their move and for the housing to thus enclose them with a radial clearance. This radial clearance lets the shafts free to vibrate inside the housing, which causes rattle and vibration sounds unpleasant to the user when the motor vehicle is moving. In order to limit these disadvantages, the mounting system detailed in document EP1 602 527 presents a clamping device for the shafts adapted to exert a force that places them in support against the housing walls.

In order to allow the user to easily adjust the height of the headrest, the force exerted by the clamping device on the shafts is limited so as to allow the shafts to slide in the vertical direction when the user exerts a force on the headrest.

SUMMARY OF THE DISCLOSURE

The present invention particularly aims to reduce the manufacturing cost of such a mounting system by diminishing the number of elements of which it is built.

For this purpose, according to the invention, a mounting system of this type is characterized in that the moving carriage includes at least a drive slot in which a slug from the jaw is able to move.

In preferred embodiments of the invention, it is possible to further resort to one and/or the other of the following arrangements:

- the moving carriage moves in the vertical direction between the blocking position and the unblocking position, and one portion at least of the drive slot is substantially inclined with respect to the vertical direction;
- the jaw includes a flexible clamping member adapted to be in contact with the shaft and to apply the clamping force on said shaft, when the jaw is in the immobilization position;
- the jaw includes at least one opening behind the flexible clamping member in order to allow the clamping member to flex by a predetermined value when it applies the clamping force;
- the system further includes a return spring adapted to apply a force on the moving carriage in order to bring the carriage back in the unblocking position;
- the jaw and the housing form a single piece, the jaw pivotally moving between the immobilization position and the release position using a flexible hinge;
- the system further includes a lock that can be controlled by the moving carriage between a locking position and an unlocking position, said lock immobilizing the shaft in the vertical direction when it is in the locking position.

Another object of the invention is to provide an assembly including a headrest comprising at least one shaft extending in the vertical direction, as well as a mounting system of said shaft as described above.

In a preferred embodiment of the invention, the shaft may have at least one notch adapted to engage with the lock when it is in the locking position.

Finally, another object of the invention is to provide a vehicle seat including a base, a backrest mounted on the base and an assembly as described above mounted on the backrest.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the invention will become apparent from the description below of one of its embodiments, given as a non-limiting example, with reference being made to the attached drawings.

In the drawings:

FIG. **1** is a schematic representation in lateral view of a vehicle seat,

FIG. **2** is a schematic representation in perspective of an upper part of the vehicle seat of FIG. **1**, illustrating a headrest mounted on a seat backrest through a mounting system,

FIG. **3** is a representation in fragmented perspective of the mounting system in FIG. **2**,

FIG. **4** is a representation in perspective of the housing of the mounting system of FIG. **2**,

FIGS. **5***a* and **5***b* are partial cross-sectional representations in the referenced V-V orientation in FIG. **4** when the clamping device is in release position and in immobilization position respectively,

FIG. **6** is a representation in perspective of the moving carriage of the mounting system of FIG. **2**,

FIGS. **7***a* and **7***b* are representations in perspective of the mounting system of FIG. **2** when the clamping device is in release position and in immobilization position respectively,

FIG. **8** is a partial cross-sectional representation in the referenced VIII-VIII orientation in FIG. **2** when the lock is in immobilization position.

In the various figures, the same references indicate identical or similar elements.

DETAILED DESCRIPTION OF THE DISCLOSURE

By first referencing to FIG. **1**, a vehicle seat **1** mounted on a floor P extending in a horizontal plane XY is illustrated in FIG. **1**.

The seat **1** comprises a base **2** that extends in a longitudinal direction X of the horizontal plane XY and a backrest **3** that extends in a vertical direction Z perpendicular to the horizontal plane XY. A transversal direction Y of the horizontal plane XY is also defined here, perpendicular to the longitudinal direction X.

The seat **1** is, for example, a vehicle seat for which the base **2** is mounted on the floor P using guideways **4** adapted to slide in the longitudinal direction X in order to be capable of adjusting the longitudinal position of the base **2** with respect to the floor P. The backrest **3** comprises a reinforcement enclosed in a lagging and may be mounted on the base **2** by means of an articulation around a transversal axis in order to be capable of adjusting the inclination of the backrest **3** with respect to the base **2**.

In FIGS. **1** and **2**, the seat **1** also includes a headrest **5** mounted on an upper part of the backrest **3**, opposite to the base **2**, through a mounting system **10** located in the backrest **3** thickness.

The headrest **5** comprises a lagging **6** and a metallic insert **8** supporting the lagging **6**. In the represented embodiment, the metallic insert **8** substantially presents an inversed U-shape comprising a horizontal part and two vertical shafts **7** connected by the horizontal part. As represented in transparence of the lagging **6** in FIG. **2**, the horizontal part and a part of the shafts **7** are arranged in the lagging **6**, the shafts **7** extending to respective free ends placed outside of the lagging **6**.

Throughout the description, the terms "front" and "back" and their synonyms are understood as relating to the front and the back of the seat in the longitudinal direction X when the seat is used normally. The terms "top", "bottom", "upper" and "lower" and their synonyms relate to the vertical axis Z again when the seat is used normally. Finally, the headrest and the seat globally present symmetry with respect to a vertical plane of symmetry XZ located at the middle of the transversal extension of said seat and headrest. The terms "inner" and "outer" should be understood as relating to the distance to this plane of symmetry in the transversal axis Y. Therefore, the "inner side of an object" should be understood as being the side of this object that is the nearest to the plane of symmetry in the transversal direction Y and "the outer side of an object" should be understood as being the side of this object that is the furthest from the plane of symmetry in the transversal direction Y.

The mounting system **10** represented in FIG. **3** includes a housing **20**, detailed in FIG. **4**, consisting of a body **21** with a rectangular general shape and located in the thickness of the backrest **3**, as well as two sleeves **22**, **23**, that extend inside the lagging of the backrest **3** and in the vertical direction Z from the upper surface **21***a* of the body **21** to the upper end **3***a* of the backrest **3**.

The sleeves **22**, **23** are tube-shaped and both possess an inner surface delimiting a pocket **22***a* **23***a* open to the outside at their upper ends **22***b*, **23***b* and open towards the interior of the body **21** at their lower end **22***c*, **23***c*. The pockets **22***a*, **23***a* are dimensionally adapted to accommodate the vertical shafts **7** of the headrest **5** with a radial clearance **29**, said shafts being inserted in the housing **20** by the upper ends of the sleeves **22***b*, **23***b* and by following the vertical direction Z.

In an advantageous way, the body **21** presents on its lower face **21***b* two openings **21***c*, **21***d* placed with respect to the lower ends **22***c*, **23***c* of the sleeves **22**, **23**, so as to allow the shafts **7** to cross through and in the vertical direction Z the housing **20**.

As indicated in FIG. **5***a*, once the shafts **7** are inserted in the housing **20**, there is a radial clearance **29** between the shafts and the housing. This radial clearance **29** allows the shafts to slide without stress in the housing.

With reference being made to FIG. **4**, the mounting system **10** further comprises two jaws **24**, **25** including clamping members **24***a*, **25***a* which are placed in contact with the surfaces to be clamped **7***b* of the shafts **7**.

The jaws **24**, **25** may for example be formed in the same part as the housing **20** by doing two cuts **24***b*, **25***b* almost closed to themselves. The cuts **24***b*, **25***b* let the jaws **24**, **25** connected to the body **21** only by means of flexible hinges **26**, **27**, for example consisting of a band of small thickness from the housing material **20**.

The jaws **24**, **25** may thus rotate in the plane XY using flexible hinges **26**, **27** to move from an immobilization position, visible in FIGS. **5***b* and **7***b*, where they are in contact with the shafts **7** to a release position, visible in FIGS. **5** *a* and **7***a*, where they are not in contact with the surfaces to be clamped **7***b* of the shafts **7**.

As an alternative, the jaws **24**, **25** may be in a different part of the body **21** and connected to said body **21** by means of pivot hinges.

In the immobilization position, visible in FIGS. **5***b* and **7***b*, the jaws **24**, are both in contact with the surfaces to be clamped **7***b* of the shafts **7** at a clamping member **24***a*, **25***a* of said jaws **24**, **25**.

The clamping members exert, on the surfaces to be clamped **7***b* of the shafts **7**, a force directed in the transversal direction Y and outwardly oriented. The shafts **7** are thus both repelled towards the walls of the housing **20**, so that their support surfaces **7***c* are in contact with the inner surfaces **70** of the sidewalls **72**, **73** of the housing **20** as indicated in FIG. **5***b*.

In an advantageous way, when the jaws are in immobilization position, the inner surfaces **70** each have at least 2 contact points **70***a*, **70***b*, punctual or linear, with the support surfaces **7***c* of the shafts **7** indicated in FIG. **5***b*. The projections on a horizontal plane XY of point **70***a*, **70***b* as well as the contact point of the surfaces to be clamped **7***b* of the shafts **7** with the clamping members **24***a*, **25***a* are not confounded. Hence, when the jaws **24**, **25** are in immobilization position, the shafts **7** are both maintained by three different contact points in the horizontal plane XY which ensures their immobilization in the horizontal plane XY.

To that end, the inner surfaces **70** may for example comprise two inclined surfaces **70***c*, **70***d* relative to one another so as to form a "V" in the horizontal plane XY. Alternatively, they may comprise rivets or ribs projecting towards the interior of the housing and in the direction of the support surface **7***c* of the shaft **7**, to engage with it when the jaws **24**, **25** exert a clamping force on the shafts **7**.

In an embodiment of the invention, to control the force exerted by the jaws **24**, **25** on the shafts **7**, the clamping members **24***a*, **25***a* are flexible.

Flexible means that the clamping members **24***a*, **25***a* may flex or deform in the transversal axis Y to absorb and control part of the force applied on the shafts.

The force applied by a clamping member **24***a*, **25***a* on the shaft **7** may for example range from 10N to 400N.

The force applied may advantageously be close to 100N.

Flexion means a deformation of the shape of a clamping member **24***a*, **25***a* when a jaw **24**, **25** is in the immobilization position, compared to the shape of this clamping member **24***a*, **25***a* when said jaw is in the release position.

The clamping members **24***a*, **25***a* may flex by a predetermined value ranging for example from 0.5 mm to 5 mm.

Advantageously, the clamping members may flex by a predetermined value substantially close to 1 mm.

The predetermined value of the flexion is for example measured as being a driving-in length in the transversal axis Y of the part of the clamping member which is in contact with the shaft **7**.

The driving-in length is measured by comparing the shape of the clamping member **24***a*, **25***a*, with the jaw, in the immobilization position, to the shape of the clamping member **24***a*, **25***a*, with the jaw in the release position, for example, by measuring the movement of the part of the clamping member **24***a*, **25***a* which is in contact with the shaft **7** with respect to the rest of the clamping member **24***a*, **25***a*.

The clamping members **24***a*, **25***a* may consist of flexible surfaces of the jaws **24**, **25**.

In an embodiment of the invention, the jaws **24**, **25** may for example be made of plastic, for example POM (polyoxymethylene).

In this embodiment, the jaws **24**, **25** and the body **21** may for example be made of a single piece as it has been described above.

In another embodiment, the jaws **24**, **25** and the body may be made of two different materials, the body **21** being for example out of plastic, for example a polymer like ABS or PC/ABS and the hinges out of ABS or POM.

The clamping members may also consist of bars or flexible tongues mounted on the jaws **24**, **25**, for example metal flexible tongues fixed on the jaws **24**, **25**.

In this embodiment, the bars or flexible tongues may be made of plastic but also metal, for example metal flexible tongues.

In this way, the holding in time of the clamping members is improved.

When the clamping members **24***a*, **25***a* consist of flexible surfaces of the jaws **24**, **25**, they might for example both be enclosed in two vertical openings **24***d*, **24***e*, **25***d*, **25***e*, performed in the jaw **24**, **25** at the front **24***d*, **25***d* and at the back **24***e*, **25***e* of the clamping member **24***a*, **25***a*. In this way, the clamping member **24***a*, **25***a* is connected to the jaw only by its upper **24***f*, **25***f* and lower ends **24***g*, **25***g* and can deform in the transversal axis Y to absorb part of the force applied by the jaws.

Furthermore, openings **24***h*, **25***h* may be performed in the jaws, behind the clamping members **24***a*, **25***a*, so as to allow the clamping member **24***a*, **25***a* to flex by a predetermined value when it applies the clamping force.

The openings **24***h*, **25***h* might be also make it possible to reduce the thickness of the material forming said clamping members **24***a*, **25***a*, when the latter consist of flexible surfaces of the jaws **24**, **25**, and hence to increase their flexibility.

The clamping members **24***a*, **25***a* then constitute elastic elements of force transfer.

With reference being made to FIGS. **4** and **6**, the mounting system **10** further includes a moving carriage **30** engaging in an opening **28** of the body **21**. The opening **28** extends in the vertical Z direction so as to allow the moving carriage **30** to move in said vertical direction Z from a blocking position visible in FIG. **7***a* to an unblocking position visible in FIG. **7***b*.

The moving carriage **30** includes a front surface **30***a* and a back surface **30***b* indicated in FIG. **3**. It has a main body **31** and to side wings **31***a*, **31***b* extending across the main body **231** in the transversal direction Y.

The side wings **31***a*, **31***b* of the moving carriage **30** both have a drive slot **32**, **33**.

In an embodiment of the invention, a portion **32***c*, **33***c* at least of the drive slots **32**, **33** is inclined with respect to the vertical direction Z.

In an embodiment, the portion **32***c*, **33***c* of the drive slots **32**, **33** may for example be outwardly inclined, being further from a shaft **7** at its upper end than at its lower end.

The drive slots **32**, **33** may be straight, rounded or presenting angles.

The drive slots **32**, **33** possess, at least in their inclined portion **32***a*, **33***c*, an inner flank **32***a*, **33***a* located on the side of the main body **31** of the moving carriage **30** and in outer flank **32***b*, **33***b* located on the opposite side of the drive slot.

The jaws **24**, **25** further comprise slugs **24***c*, **25***c* fitting in the drive slots **32**, **33** of the moving carriage **30**.

The slugs **24***c*, **25***c* are for example cylindrical studs visible in FIG. **4**, extending frontwards in the longitudinal direction X, and come to penetrate the drive slots **32**, **33** of the moving carriage **30** through the back face **30***b* of said carriage **30**.

Due to the inclination of the drive slots **32**, **33** with respect to the vertical axis Z, the movement of the moving carriage **30** in the vertical direction Z drives the support of the slugs **24***c*, **25***c* against the inner or outer flanks of the drive slots **32**, **33** as illustrated in FIGS. **7***a* and **7***b*.

More precisely, when the moving carriage **30** moves from the blocking position to the unblocking position, the outer flanks **32***b*, **33***b* of the drive slots **32**, **33** come to exert a force against the slugs **24***c*, **25***c* repelling them outwards as a result. The jaws **24**, **25** then rotate outwards to engage with the shafts **7**.

Hence, when the moving carriage **30** is in its unblocking position, it applies a force to the jaws **24**, **25** to place them in contact with the shafts **1**, this force being transmitted to the shafts through the jaws **24**, **25**.

In an embodiment of the invention, the inner flanks **32***a*, **33***a* of the drive slots **32**, **33** may be flexible to absorb part of the force exerted by the moving carriage **30** on the jaws **24**, **25**. Openings **35**, **36** may for example be performed in the side wings **31***a*, **31***b*, on the inner side of the drive slots **32**, **33**, to reduce the thickness of the material forming the inner flanks **32***a*, **33***a*. In this way, when the inner flanks **32***a*, **33***a* engage with the studs **24***c*, **25***c*, said flanks may elastically bend inwards, in the openings **35**, **36**, and absorb part of the force exerted by the moving carriage **30** on the jaws **24**, **25**.

A return spring **40**, consisting of a metallic wire rolled around a rivet **40** *a* performed in the housing **20**, is fixed to its first end **40** *b* to the housing **20** and to its second end **40** *c* to the moving carriage **30**. The spring **40** is rolled so that it applies a force on the moving carriage **30**, for example an upwardly directed force, in order to bring the carriage **30** back in its unblocking position and to stress the jaws **24**, **25** in their immobilization positions.

A traction wire **50** may penetrate the housing **20** through an opening **21** *e* performed in its lower surface **21** *b* and be linked to the moving carriage **30** at one of its ends **51** so that it is possible to control it from the unblocking position to the blocking position, to release the jaws **24**, **25**. A notch **37** may for example be performed in the moving carriage **30** to accommodate the end **51** of the traction wire **50**.

The other end of the wire may be accessible from various locations of the vehicle and from the seat so as to allow the retraction of the headrest **5** from a distance by the vehicle driver or by a user handling the seat.

Alternatively, a motor or an electromagnet may be connected to the moving carriage **10** and/or replace the spring **40** for allowing to move said moving carriage

Advantageously, the use of a single spring, without active devices, makes it possible to control the movement of the moving carriage through a manual control (i.e. a cable and a spring), which simplifies in particular the mounting system.

With reference being made to FIG. **8**, a lock **60** is placed at the upper end **22***b* of a sleeve **22**. The lock **60** consists of a latch **61** having an opening **62**, through which the shaft **7** extends, and a shoulder **63** placed on the inner side of said opening **62**.

The lock **60** may be moved in the transversal direction Y from an unlocking position in which there is a clearance between the lock **60** and the shaft **7**, to a locking position in which the shoulder **63** is in contact with the shaft **7** and may engage, in some vertical positions of the shaft **7**, with notches **7***a* performed in the inner face of said shaft **7**. A spring **66** applying an outwardly oriented force in the transversal direction Y makes it possible to stress the lock **60** in the locking position.

In an advantageous way, the lock **60** may be manually activated by the user at one of its ends **64** accessible from the outside.

The lock **60** may further comprise a control surface inclined inwards with respect to the vertical direction Z, i.e. further away from the inside at its lower end than at its upper end. The moving carriage **30** will then be able to have an upper arm **34** extending vertically inside the sleeve **22** from the main body **31** to an upper end **34***a* having an inclined surface **34***b* adapted to engage with the inclined control surface **65**.

A portion of the inclined surface **34** *b* of the arm **34** is located above and outside the inclined control surface **65**. In this way, when the moving carriage **30** moves from the unblocking position to the blocking position, the inclined surface **34** *b* of the arm **34** may engage with the inclined control surface **65** to move the lock **60** from its locking position to its unlocking position.

Finally, the sleeves **22**, **23** each have at their end a flange **80**, **81**, arranged on the upper end of the backrest **3** of the seat and allowing to hide the upper end **22***b*, **23***b* of the sleeves **22**, **23** from the user's sight.

The invention claimed is:

1. A vehicle seat including:

a base,

a backrest mounted on the base,

a headrest mounted on top of the backrest, the backrest comprising at least one shaft extending in a vertical direction into the backrest,

a housing fixed in the backrest and enclosing the shaft with a radial clearance,

a moving carriage movably mounted on the housing between a blocking position and an unblocking position, the moving carriage comprises at least one drive slot,

at least one jaw movably mounted on the housing between an immobilization position and a release position, wherein the jaw is supported on and rotates relative to the housing between the immobilization position and the release position via a flexible hinge, the jaw being adapted to apply, when it is in the immobilization position, a clamping force to the shaft in a clamping direction perpendicular to the vertical direction so that the shaft is supported in the housing, and the jaw enabling the shaft to slide vertically in the housing when the jaw is in the release position, the jaw having a slug which is slidably mounted in the drive slot of the moving carriage such that the slug is engaged by the drive slot causing the jaw to be in the immobilization position when the moving carriage is in the unblocking position and to be in the release position when the moving carriage is in the blocking position, and

a lock which is movably mounted with regard to the housing between a locking position wherein the lock immobilizes the shaft in the vertical direction and an unlocking position wherein the lock enables the shaft to move in the vertical direction, the lock and the jaw cooperating with the shaft at different heights, and the lock being controlled by the moving carriage so that the lock is in the locking position when the moving carriage is in unblocking position, and the lock is in the unlocking position when the moving carriage is in blocking position.

2. The vehicle seat according to claim **1**, wherein the moving carriage is movably mounted in the vertical direction between the blocking position and the unblocking position,

and wherein at least one inclined portion of the drive slot is substantially inclined with respect to the vertical direction and engages the slug to drive the jaw to be in the immobilization position when the moving carriage is in the unblocking position.

3. The vehicle seat according to claim **1**, wherein the jaw includes a flexible clamping member adapted to be in contact with the shaft and to apply the clamping force on said shaft, when the jaw is in the immobilization position.

4. The vehicle seat according to claim **3**, wherein the jaw includes at least one opening behind the flexible clamping member in order to allow the clamping member to flex by a predetermined value when it applies the clamping force.

5. The vehicle seat according to claim **1**, further comprising a return spring adapted to apply a force on the moving carriage in order to bring the carriage back into the unblocking position.

6. The vehicle seat according to claim **1**, wherein the jaw and the housing form a unitary assembly.

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